

# U.S. Glass Recycling Market Outlook

Joe Cattaneo, President  
Glass Packaging Institute

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The Glass Packaging Institute (GPI) is the trade association representing the North American glass container industry.

8 member manufacturers

33 associate member supplier companies

[www.gpi.org](http://www.gpi.org)



# 50 U.S. Glass Container Manufacturing Plants

<u>State</u>	<u># Per State</u>
California, Pennsylvania	5
Indiana	4
Georgia, Illinois, New Jersey, North Carolina, Oklahoma, Texas	3
Colorado, Missouri, New York, Virginia	2
Arkansas, Florida, Louisiana, Massachusetts , Michigan, Minnesota, Ohio, Oregon, Washington, Wisconsin	1



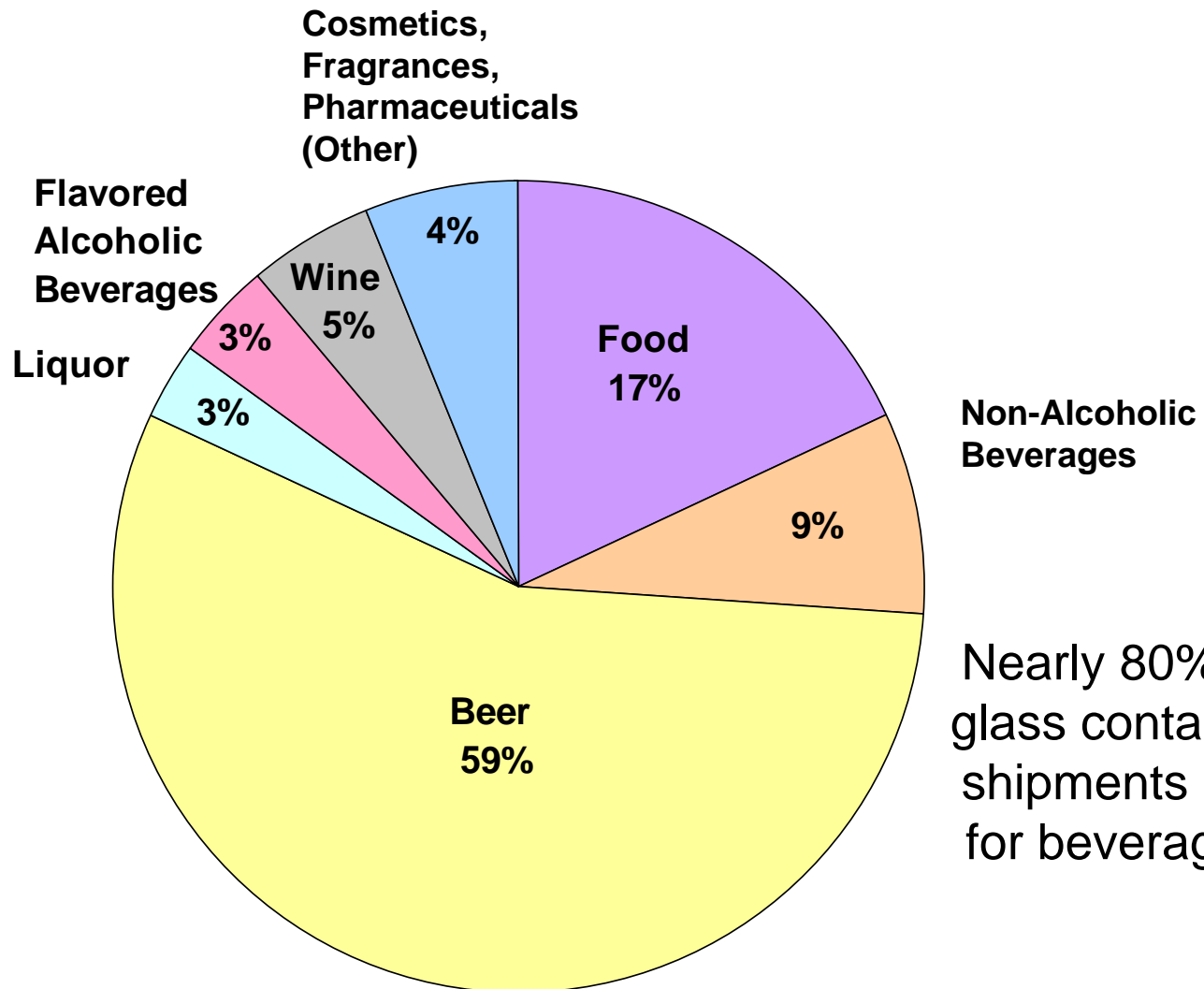
# Glass Container Shipments & Production Through December, 2007

Shipments		Production	
January–December 2006	January – December 2007	January–December 2006	January–December 2007
241,507	244,084	247,257	248,585
Up 1%		Up 0.5%	



Source: U.S. Dept. of Commerce, Bureau of the Census  
Data reported in thousands gross. One thousand gross = 144,000

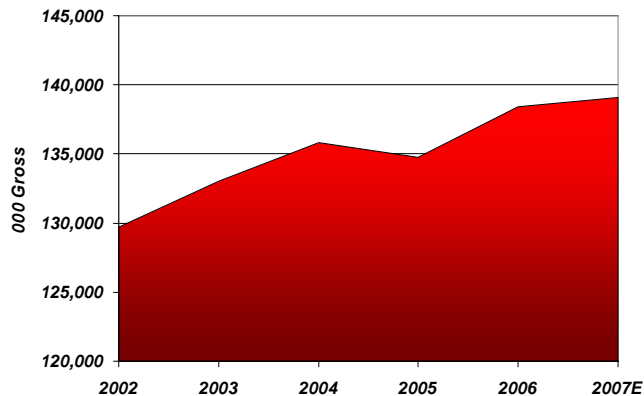
# 2006 U.S. Glass Container Shipments By Category



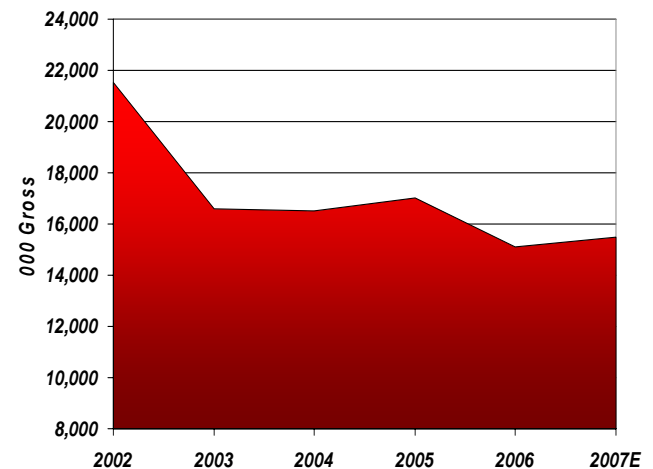
Nearly 80% of glass container shipments are for beverages

# U.S. Glass Container Industry Shipments Beer, Wine, and Spirits

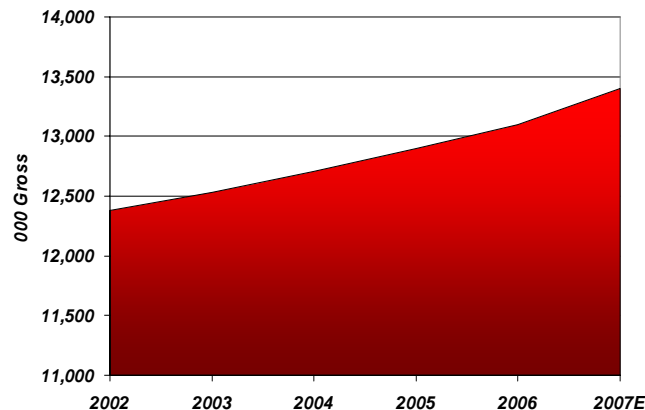
Beer 2002 – 2007E



Spirits 2002 – 2007E



Wine 2002 – 2007E



# 2006 U.S. Glass Container Recycling

- 30.7% of beer and soft drink bottles recycled in 2006
- 15% of wine and liquor bottles recycled in 2006
- And 25.3% of all glass containers



(Source: U.S. EPA)

# What is Glass?

Sand – 70–75%

Soda Ash – 10–15%

Limestone – 10–15%

Additives – 5%





# What is Glass?

**Cullet** – Recycled glass used at levels as high as 80% when available



# Current Cullet Usage Criteria

- **Color Sorted:** Clear, Amber, and Green
- **Contaminant Free:** no ferrous materials, ceramics, etc.
- **Meets plant specifications** as to particle size (usually 3/8 inch)
- **Container Glass Only:** no ceramic coffee cups, drinking glasses, mirrors, etc.



# Using Quality Cullet Saves Energy

- Over a ton of natural resources are saved for every ton of glass recycled.
- Energy costs drop about 2–3% for every 10% cullet used in the manufacturing process.
- For every six tons of recycled container glass used, one ton of carbon dioxide, a greenhouse gas, is reduced.
- Glass has an unlimited life, it can be recycled over and over again.



# 65 Cullet Processor Locations in 25 States

■ California	10	■ Texas	3
■ Pennsylvania	8	■ Connecticut	3
■ Ohio	4	■ IL, KY, MI, NC	2
■ New Jersey	4	■ IA, ME, MA, MO	
■ New York	4	MS, NE, OK,	
■ Florida	3	OR, TN, VA,	
■ Georgia	3	WA, WI	1
■ Indiana	3		



# Optical Sorting & Ceramic Detection Add-On Equipment at Cullet Processor Locations

- Hayward, CA
- Madera, CA
- Vernon, CA
- San Leandro, CA
- Los Angeles, CA
- South Windsor, CT
- Sarasota, FL
- Chicago, IL
- Franklin, MA
- Bridgeport, NJ
- Raleigh, NC
- Ontario, NY
- Mt. Pleasant, PA
- Bethlehem, PA
- \* Boulder, CO
- \* St. Paul, MN



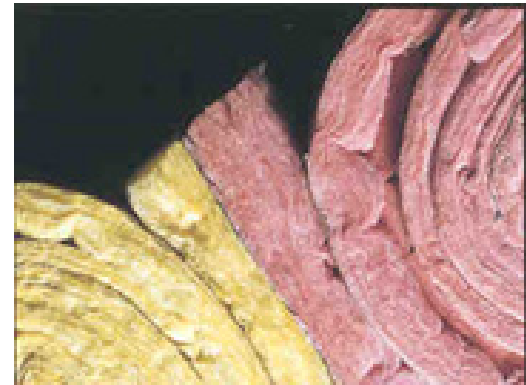
\*Proposed 2008

# Primary Markets for Quality Cullet

Glass bottles  
and jars



Fiberglass



# Secondary Markets for Cullet



■ Bead



■ Frictionators



■ Tile



■ Fluxes/Additives

- Countertops and floors
- Landscaping
- Brick manufacturing
- Filtration
- Roadbed Aggregate – **Diversion**
- Landfill Cover – **Diversion**



# Glass Recycling Market Forecast



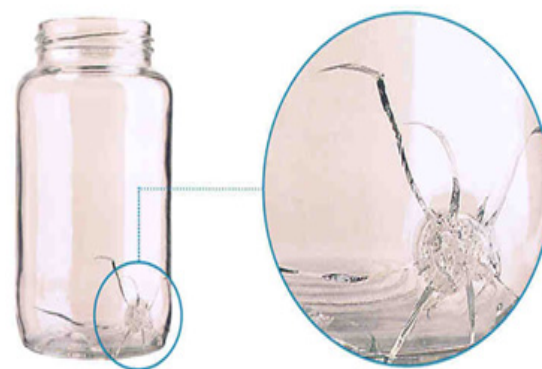
## Sources:

- Curbside collection and quality
- Drop-off
- Mandatory beverage container deposits
- Commercial (on-premise)
- Unused inventory
- In-house cullet



# Glass Container Recycling: Critical Issues

- Availability
- Quality
- Cost



*The effects of ceramic contamination.*

# Curbside Collection Challenges

## Collection and Quality

- Compaction/breakage
- Single stream collection

## Processing and Quality

- Glass handling
- Sorting equipment
- Negative sort

## Market Availability

- Uneven geographic dispersion of processing and end-markets
- Secondary uses and “diversion” are growing



# States with Mandatory Beverage Container Deposits



# Deposit Legislation Impact on Glass Recycling Markets

- Quality ensured (contaminant free)
- Higher percentage of containers returned for closed-loop recycling
- But does not include all glass containers



# Commercial Collection

## Driving Factors:

- Consistent supply of high quality cullet primarily from restaurants, bars, and hotels
- Nearby glass markets
- State legislation

## Benefits:

- Lower disposal costs
- Environmental payoffs
- Customer recognition

## Practical problems:

- Incentives to participate
- Economics for participating businesses
- Glass collection infrastructure
- Transportation



# On-Premise Recycling in North Carolina



- **ABC Legislation**
  - Requires all ABC permit holders to recycle containers effective January 1, 2008
- **Promotional materials**
  - Partners: GPI, Land-of-Sky Regional Council and NC Division of Pollution Prevention
  - Resources: bar/restaurant ads, promotional material, and web site [www.partnership4recycling.org](http://www.partnership4recycling.org)





# Model Programs: Orange County, NC

## Partners

- Orange County
- Over 125 restaurants

## Collection

- 45 tons/month of color-separated glass bottles, cans, and plastic
- One restaurant recycles over 60% of its waste (about 24 tons of food and 26 tons of bottles and cans)



**Bottoms Up!**  
To These Businesses For Participating In Our Glass Recycling Program

A Southern Season • A.C. Fitness • Acme Food & Beverage Co. • Alfredo's • Akai Hana • Alley Oops Treehouse • Amante Pizza • Anna Maria's (Hillsborough) • Armadillo Grill • The ArtsCenter • Aveda • Bagels on the Hill • Bandido's (both locations) • The Barbeque Joint • Bear Rock • Ben & Jerry's • Bin54 • Blend • Blue Bayou • Bolero's Cafe • Breadmen's • Bronx Pizza • Bub O'Malley's • Caffè Drinde • Carolina Brewery • Carolina Coffee Shop • Carrboro Century Center • Cambaritos • The Catering Co. • Cat's Cradle • The Cave • Chapel Hill Country Club • Chapel Hill Day Care • Chapel Hill Tennis Club • Chapel Hill Wine Co. • Citrus • Crook's Corner • Cup a Joe • Curves (Hillsborough) • Dead Mule Club • Ekhine's on Franklin • Elmo's Diner • El Rodeo • Eno River State Park • Fiesta Grill • 501 Diner • Flying Burrito • Foster's Market • 411 West • The Franklin Hotel • Fuse • Goodfellows • Gulf Rim • Hector's • Hell • Hillsborough Wine Co. • Hunan Chinese Restaurant • IFC Community House • Il Pao Ristorante • Jade Palace • J & J's Deli • Java Cafe • JuJuBe • K&W Cafeteria • Lantern Restaurant • La Residence • LaRossa's Deli • Lune & Basil • Loco Pops • Los Pottillos • The Library • Linda's • Local 506 • The Loop • Lucy's • Mama Dips • Maple View Dairy • Maple View Ice Cream Shops (all 3 locations) • Margaret's Cantina • Mariakakis • McAlister's Mediterranean Deli • Milltown • M&M Billiards • Nancy's Bar and Grill • Off Franklin Bar & Grill • O'Neils Neighborhood Grill • Open Eye Cafe • Orange County Social Club • Oscar's "Q" & Bar • Padgett Station • Panciuto • Panzanella • Patio Loco • Pazzo • Perang • Pepper's Pizza • Pop's Pizzeria • Provence • Reservoir • Rizzo Center • Sal's Pizza & Italian Restaurant • Sandwich • Santoga Grill • Skylight Exchange • Spanky's Siena • Southern Village Pool & Raquet Club • Southern Rail • Spice Street • Spotted Dog • Squid's • Starbucks • That Coffee Place • 3 Cups Tallulas • Time Out Sports Bar • Toledo's Taqueria • Tyler's • Tupelo's • Weatherlane Cafe • Weaver Street Market (both locations) • West End Wine Bar • Whole Foods Market • YMCA

**Orange County Solid Waste Management**  
968-2788  
**Please Don't Drink and Drive!**

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# Model Programs: Fort Collins, CO



## Brown Bottle Recycling Program

### Partners

- City of Fort Collins
- New Belgium Brewing Company
- Rocky Mountain Bottle

### Collection

- About 15 businesses
- Collected in 65 gallon polycarts
- 26.4 tons/year – 2006
- 2.3 tons/month – 2007
- Amber content is +65%





# Model Programs: Colorado Springs, CO



## Partners

- Rocky Mountain Bottle
- Independent hauler

## Collection

- 108 tons/month
- Over 40 bars/restaurants and Ft. Carson
- Recycled bottles go back into shipping boxes
- Mostly brown glass; small amount of green/clear separated out

# Model Programs: San Luis Obispo, CA



## Partners

- San Luis Obispo County IWMA
- Glass Packaging Institute
- CA Dept. of Conservation

## Collection

- 2006 – Over 100 bars/restaurants; collected 1.7 million CRV containers
- 2007 – Added nearly 80 bars/restaurants, breweries and wineries

# Model Programs: Athens County, GA



## Partners

- Athens Clarke County Solid Waste Department
- Athens Downtown Development Authority
- About 550 commercial businesses

## Collection

- Over 128 tons of commingled bottles and cans in 2003
- Net cost to process recyclables \$4.30/ton compared to \$34/ton landfill
- Three mobile recycling stations/trailers are set out in three locations each evening
- 6-7 block area very dense (over 60 bars)
- Place in stations loose or clear bag

# City of Monterey, CA

## Partners

- City of Monterey, CA
- Glass Packaging Institute
- CA Dept. of Conservation

## Collection

- Expect to recycle about 3 million additional CRV containers in 2008
- 75 annual special event days
- Drop-off at two military installations



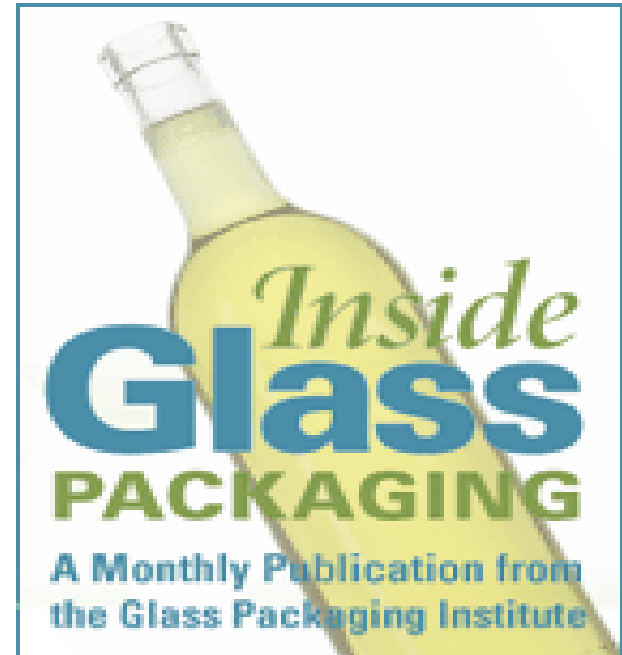
# Other Model Programs



- **Boulder, CO** – over 400 businesses; about 3,000 lbs. of commingled containers/day
- **Hickory, NC** – 14 bars/restaurant; 85 tons of source separated glass a year
- **Tacoma, WA** – about 20 tons/month glass from 370 commercial generators in 2003

# *Inside Glass Packaging Online*

- **What's inside:**
  - News and trends
  - Legislation
  - Glass bottle recycling programs
  - Organics and glass packaging
  - Glass, sustainability, and the environment



# Choose Glass Recycle Glass



[www.gpi.org](http://www.gpi.org)

